BioNanoScience 2017 vol.7 N1, pages 123-126

Adrenoceptors at the Frog Neuromuscular Junction: an Immunohistochemical Study

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Abstract

© 2016, Springer Science+Business Media New York.Previously, it was shown that both adrenaline and noradrenaline potentiate neuromuscular transmission, but which one of the receptors mediates the facilitating effect of catecholamines is still unclear. In this study, we have investigated the presence of different adrenoceptors at isolated preparations of frog cutaneous pectoris muscle by using methods of immunohistochemistry. The immunopositive reaction was observed while using polyclonal antibodies to α1- (α1B and α1D), α2- (α2A, α2B, and α2C), and β-adrenoceptors (β1, β2 and β3). In all the cases, the immunohistochemical staining of the mentioned proteins was localized in the area of the synaptic contact. Thus, at the neuromuscular junction, a wide range of α1-, α2- and β-adrenoceptors was found. It expands our understanding of the endogenous mechanisms of cholinergic neurotransmission regulation and elucidates the aspects of the mechanisms of action of adrenergic agonists, which are still intensively studied or already used for treatment of neuromuscular disorders with a primary neuro- or myopathology, and neuromuscular diseases characterized by a neuromuscular junction pathology.

http://dx.doi.org/10.1007/s12668-016-0319-5

Keywords

Adrenaline, Adrenoceptor, Neuromuscular transmission, Noradrenaline

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